

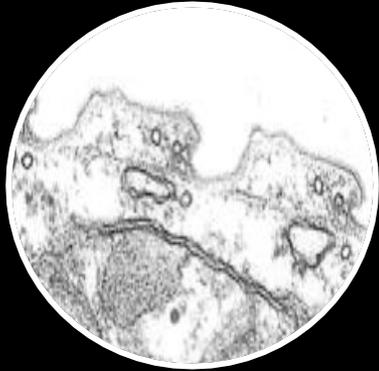
OME: Tools for Open Image Data

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University of Dundee
@jrswedlow

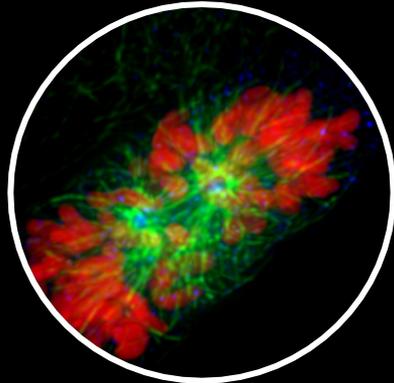
The OME Consortium
openmicroscopy.org
@openmicroscopy, @IDRnews



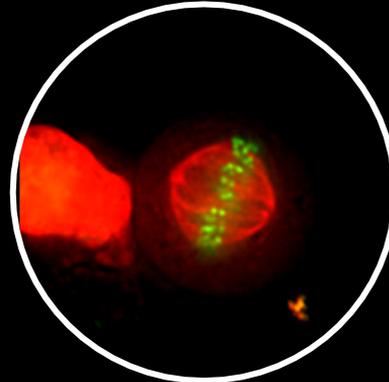
The Image Problem is Ubiquitous



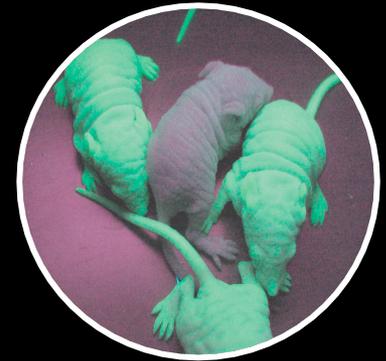
Organelles



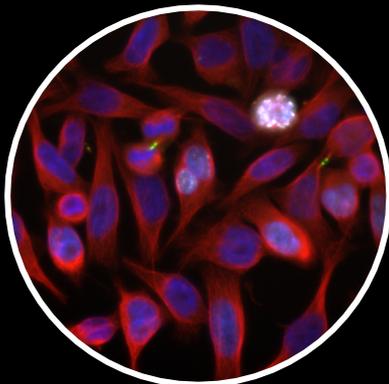
Cells



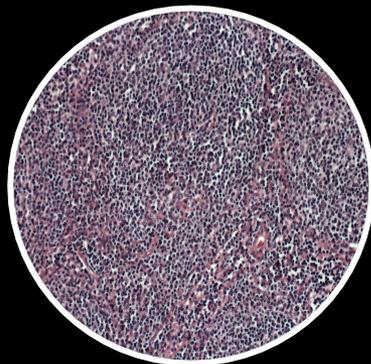
Dynamics



Physiology



Lead Discovery
Target Validation



Pathology



In Vivo

A pretty picture?

A measurement?

A resource?

Tools for increasing data value



OME-FILES

BIO-FORMATS

OMERO

<http://openmicroscopy.org>

Open Tools, Open Data

○ **Bio-Formats**

- Java-based
- Proprietary file format converter
- Reads & writes OME-TIFF

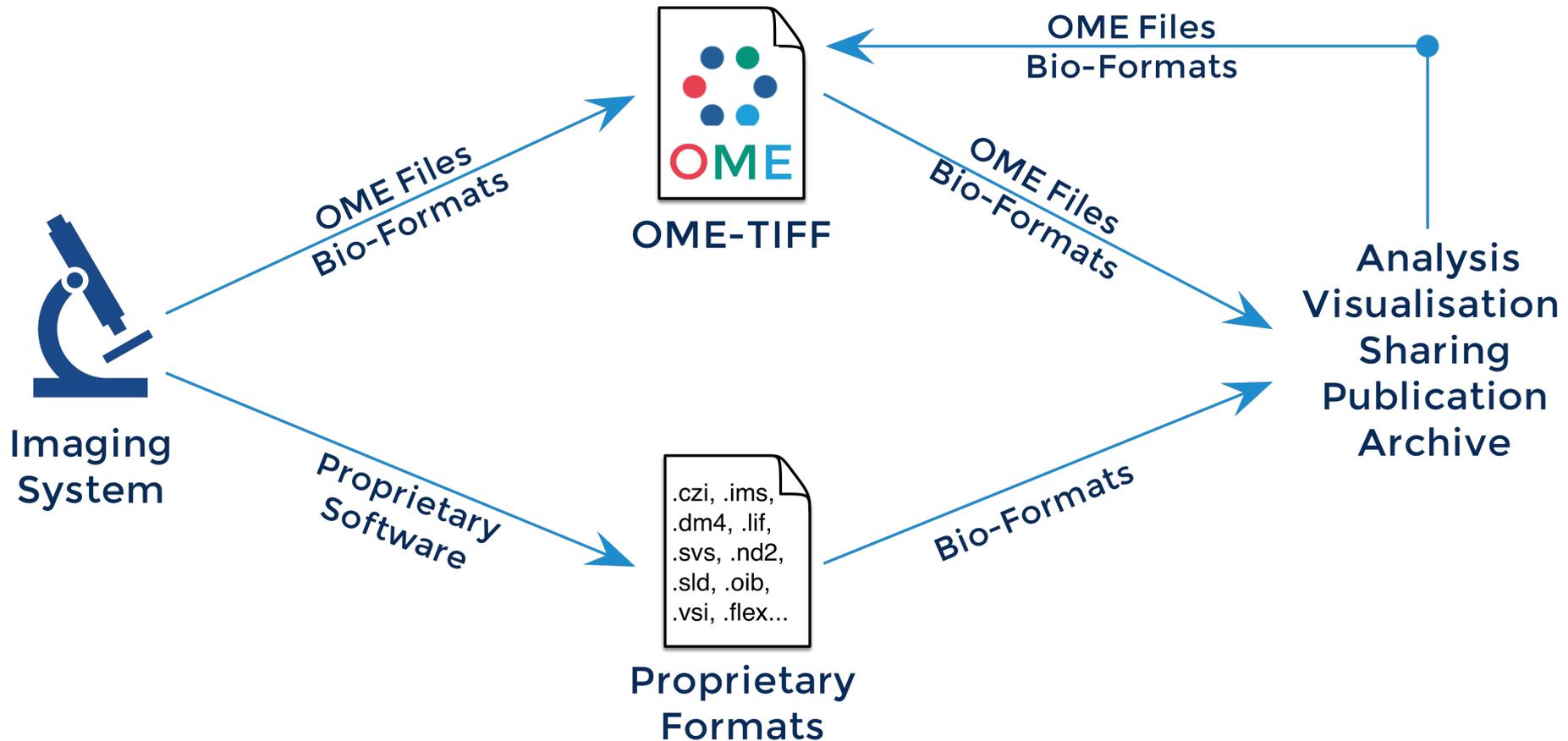
○ **OME Files**

- C++ & Python
- Reads, writes OME-TIFF

○ **OME formats for Binary data (pixels)**

- OME + BDV
- OME + KLB
- ...
- Releases in Q3/Q4 2018

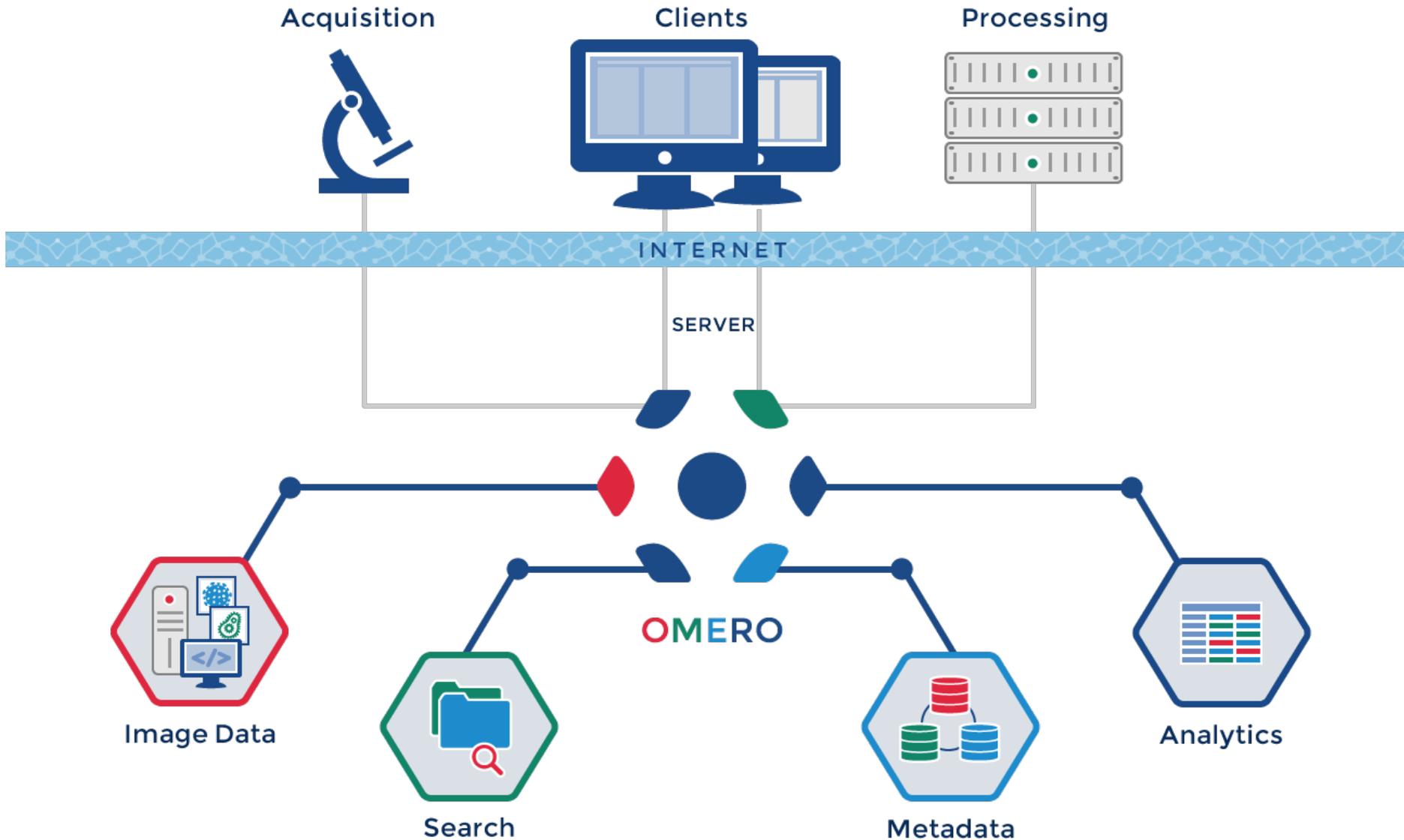
Open Tools, Open Data



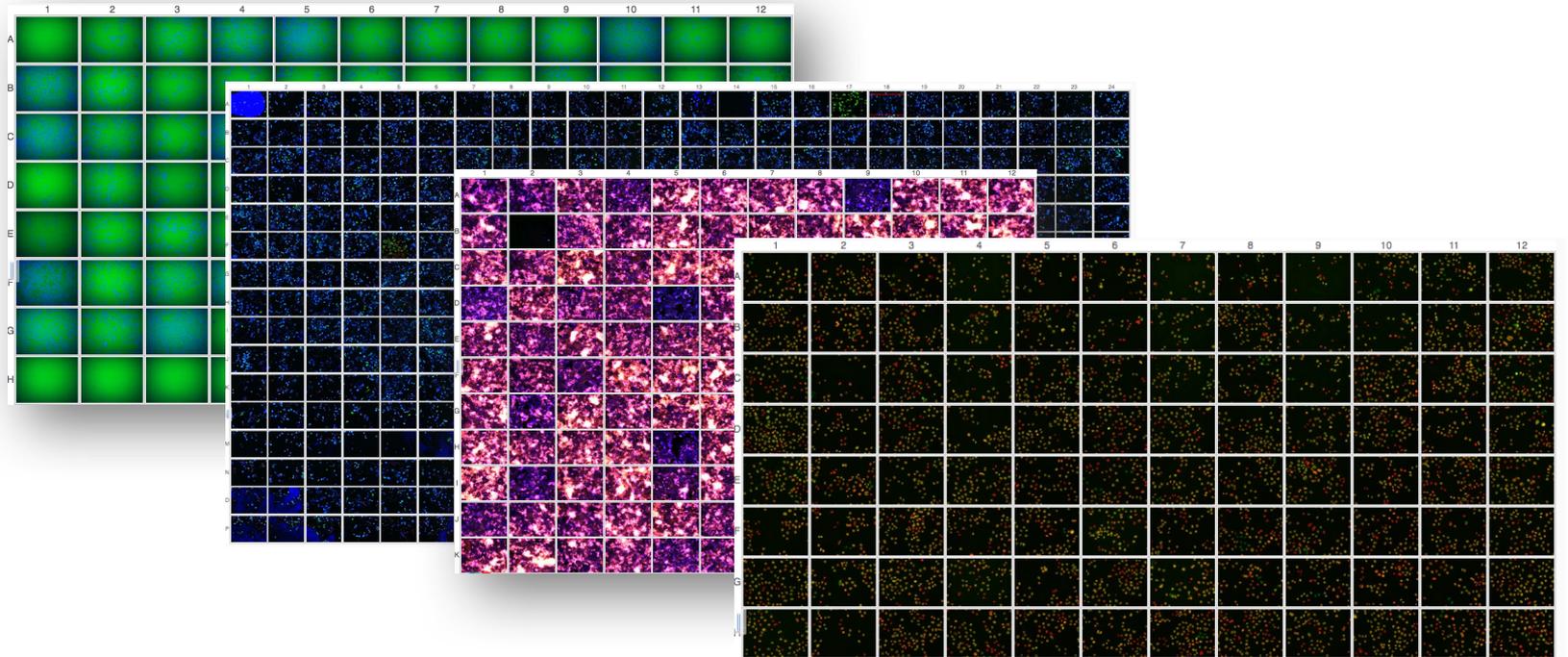
Linkert et al (2010) JCB

Leigh et al (2017) bioRxiv

The OMERO Platform



Data Sharing with OMERO



JCB



LINCS

QBI

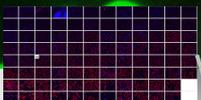
SSBD

SYN:GR:K

The IDR @ EBI Embassy



<https://idr.openmicroscopy.org>



Gene Product Targeting HCS



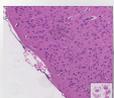
Genetic HCS



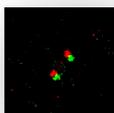
Geographic HCS



Chemical HCS



Histopathology



3D-Sim



Super-resolution

The screenshot shows the IDR web client interface. On the left, a list of studies is displayed under the heading "Integrated studies". The main area shows a grid of thumbnails for a specific well (Well K7, Field 1). On the right, a detailed view of the well is shown, including acquisition metadata, gene information, and analysis results.

Experimental metadata

Biomolecular annotations

Analysis results

Thumbnails (of 5D Images)



Cross-data browsing



Cloud analysis



Download (local analysis)

<http://idr.openmicroscopy.org>

Metric	Sept 2017
Image Data Size	42.8 TB
Image files	14.6 M
Datasets	3805
Total Images	2.68 M
Planes	37.3 M
Experiments	1.04M
Genes	19,605
Annotated Images	386 k
Phenotypic Classes	161
External Links	172 k

→~\$25,000/month on AWS←

Williams et al (2017) Nature Methods

42 Studies
4 Incoming

Cross-published:

Models:

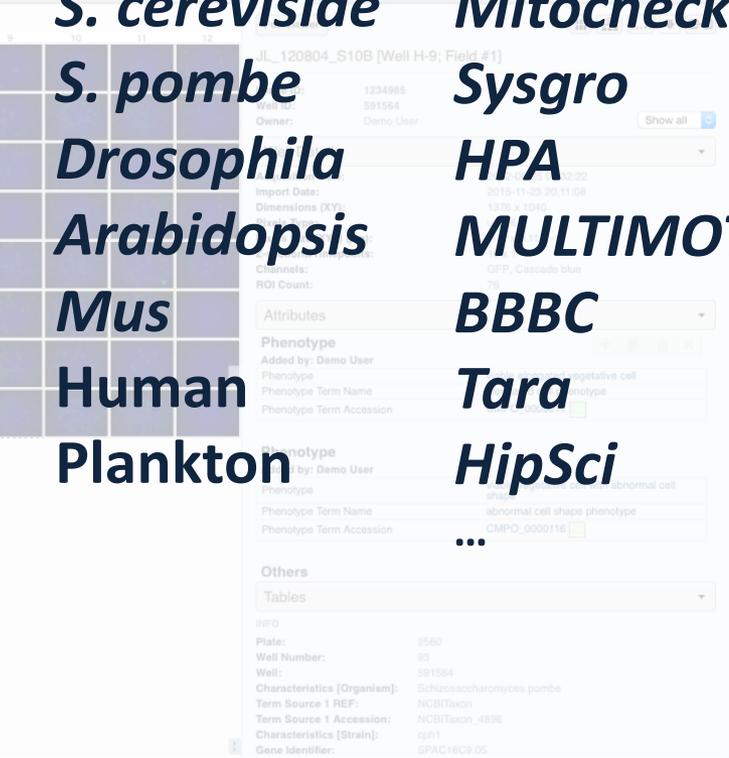
Projects:

Datasets & papers linked via DOIs



S. cerevisiae
S. pombe
Drosophila
Arabidopsis
Mus
Human
Plankton

Mitochcheck
Sysgro
HPA
MULTIMOT
BBBC
Tara
HipSci



<http://idr.openmicroscopy.org>

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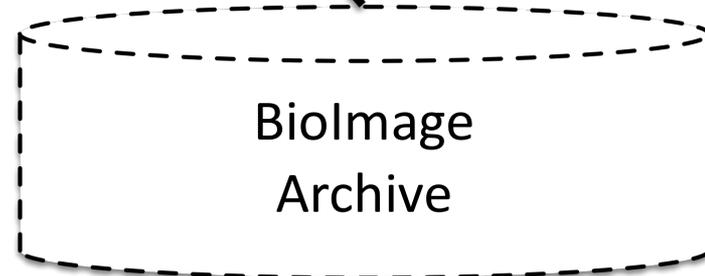
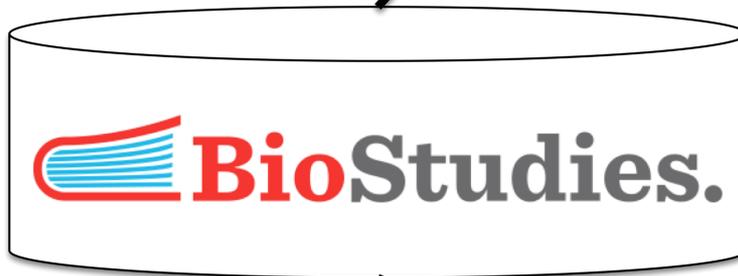
Added Value DB



Reference
Metadata

Reference
Images

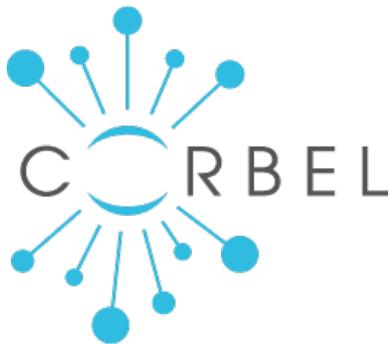
Data Archive



Publication



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